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TREATMENT OF ARTIFICIAL TREE PLANTATIONS

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Artificial tree plantations of certain species in a highly specialized commonwealth like Ohio require a radically different system of management from that ordinarily applied to forest areas. With many of these plantations the same care and culture given to ordinary field crops are applicable and profitable for the first few years of their existance. Before attempting to establish a tree plantation one should resolve to give it care and remain firm in the resolution An outlay of time and money is required at the outset, in order to insure success. One need not expect results by merely planting the trees and allowing them to care for themselves.

CULTURE

Under this head the more common trees planted throughout the agricultural regions of the state will be considered. Trees always grow faster under cultivation than in sod, or when allowed to compete with weeds and brush. Whenever possible clean cultivation gives best results, and the trees should be spaced to permit of this. In order to facilitate cultivation and pay for the cost, a crop may be grown between the rows for the first year or two. For this purpose potatoes or legumes are best. Corn is not suitable. Cultivation may be carried on in the same manner as for any field crop, and should be started as soon as necessary after planting. The period of cultivation will vary with species and conditions, but it should be carried on as long as possible. Most species commonly grown can be cultivated for three seasons. Care should be taken the third season however, as by this time the root systems of the trees are developed, and deep tillage may destroy the young fibrous roots, and thus do more harm than good. A five or seven toothed cultivator, or spring toothed or disc harrow, are desirable implements at this time. When the rows are wider apart one way than the other,

tillage can be carried on to greater advantage, although cultivation both ways is more effective. At the cessation of this operation a cover crop may be sown. For this purpose buckwheat, cow peas or clover are desirable. The first and last can be sown in July or August and cow peas in the spring. The crop should be permitted to fall and form a mulch. This material, however, must be raked away from the trees a foot or two in the fall, in order to minimize the danger of mice injury.

In case of locusts, cultivation for more than one season is of doubtful utility, on account of the propensity of the species to throw up root suckers.

MULCHING

This system of cultivation is a valuable supplement to clean cultivation and can be utilized in cases where such procedure is impossible or impracticable. Any vegetable material may be used, but wheat straw will probably be found the easiest to obtain. The mulch material should be placed about each tree for a radius of three or four feet, leaving a space next to the tree bare for a foot or two.

PRUNING

The Catalpa. In the case of this species, judicious pruning is one of the fundamental requisites of success. The catalpa is not self pruning as are some of the common forest trees, and close planting does not serve to clear the trunks of branches. It is advisable in most cases to cut the seedlings off an inch or two above the root collar before planting, thus insuring a straight growth at the outset. This is desirable where the stems have been frozen in the nursery row, or after heeling in. Usually two or three sprouts result and all but the most thrifty should be removed after they are a few inches high. The practice of cutting the trees off after they are two or more years old should not be followed, except in special cases. The extremely rapid and succulent growth of the sprout, resulting from the well developed root system, cannot support the heavy foliage, and consequently places the entire grove at the mercy of the wind and rain storms. Many of the trees become distorted and worthless. The same condition is liable to result where all side branches are removed, leaving only the stem. Lateral branches are necessary to obtain diameter growth and diameter growth is necessary in order that the tree may support its top. The ideal tree is the one having a smooth, straight trunk. This condition cannot be obtained by severe pruning. A tree receives its food argely through its leaves, and consequently growth is dependant

upon leaf surface. The fundamental principal to be observed is the elimination of forks and the securing of straight trunks, bearing in mind that the smaller side branches are an asset rather than a detriment. They should be removed however as soon as they die.

Catalpa trees are frequently injured by freezing or by the catalpa midge (see bulletin 190) and develop three or four side branches, with no terminal shoot. If possible it is best to let one of the lateral branches form the central stem, and remove the others. When this is not feasible the entire crown may be severed, allowing a sprout from this point to form the terminal. It is necessary, in certain cases, where trees are distorted to cut them off at the ground. When such procedure is necessary all sprouts may be allowed to grow for the first season, and all but the most thrifty removed the following winter. In some cases all sprouts may be removed when a foot high, except the most thrifty, which should be staked to prevent breaking off, or becoming distorted. In other cases it may be desirable to allow several sprouts to mature. There should be no hesitancy in cutting off crooked or distorted trees, which cannot be corrected by pruning. The remaining trees will afford protection against wind and other disturbing elements.

Where severe pruning has been practiced and the trees are in danger of bending over it is sometimes advisable to strip the leaves off the top for a foot or two. The leaves should never be stripped unless such danger is imminent. When trees three or four years of age are entirely pruned of side branches they become top heavy and considerable injury may result. This practice should never be permitted.

THE LOCUST

Unlike the catalpa, the locust is self pruning and the only operation necessary is the removal of branches which form forked trunks. This procedure is important and should not be neglected from the outset. The pruning of lateral branches, as in the case of catalpa, is not only unnecessary but detrimental. As soon as the trees commence to crowd, the limbs die and drop off. The tops of the seedlings trees may be cut off at the time of transplanting, but never thereafter unless injured. The spreading habit of the young trees in a grove need cause no apprehension, for in the course of time they will straighten and develop into merchantable trees.

THE OSAGE ORANGE

The species is not self pruning, and owing to its tolerance to shade the lateral branches do not die quickly when the light is excluded Careful attention should be given to the elimination of forked trunks and the lateral branches, as soon as they die.

Because of the difficulty in pruning due to thorns, it is advisable to plant the rows farther apart and the trees closer together in the rows. Such spacing will also facilitate cultivation, which should be carried on for at least three seasons.

THE MULBERRY

The various species of mulberry are similar in habit of growth and character to the osage orange and may be treated in the same manner as prescribed for the latter. Some of the mulberries are subject to winter killing to the extent that they die entirely back to the ground. Like the osage, they are excellent for windbreak purposes, and may be used about buildings, groves and orchards for this effect.

OTHER FOREST TREES

Plantations of ash, tulip poplar, oaks, walnut, poplars and practically all of the native trees are self pruning, and the removal of dead lateral branches is usually all that is required, and in some cases this operation may be of doubtful utility. The larch and bald cypress, which are exotics, may also be included in this class. The former species is inclined to retain its dead branches and they may often be profitably removed.

EVERGREENS

The tops of pines, spruces and cedars should never be cut off. It is usually advisable to prune only dead branches. In the case of pines, this is usually quite practicable. Evergreens seldom fork, but in such event, one of the branches should be removed when the tree is small.

GENERAL CONSIDERATIONS IN PRUNING

TIME OF PRUNING

The proverbial saying, "Prune when the knife is sharp", is probably correct, although it does not seem desirable to prune in late summer. The winter months offer the most opportune time, and in most respects are the best period for such work. Many prefer the months of February and March. Wounds made at this time begin to heal quickly and have the whole growing season in which to continue the process.

TOOLS

More important than the time of pruning is the kind of cut made. The cut should be clean and smooth. Ragged wounds are almost as bad for trees as for human beings. Care should always be taken not to tear the bark of the trunk. Severing the limb too

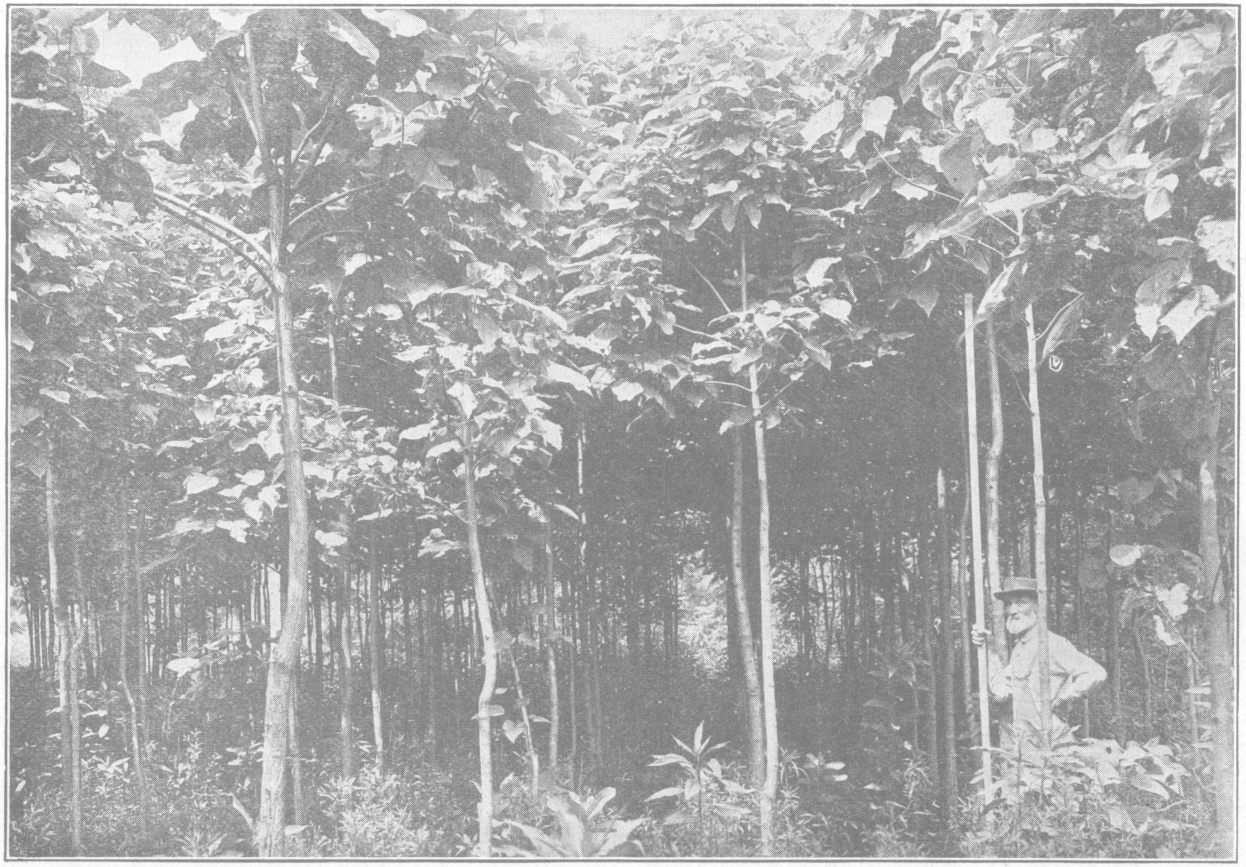
close to the trunk is injurious and makes a larger wound. Likewise the cut may be made too far out, leaving a stub which prevents a clean bole and serves as an entering place for fungus diseases and insects.

The selection of a tool will depend upon the nature of the work. For young trees having small branches, a sharp pocket or pruning knife is very practicable. Larger limbs require a chisel, pruning shears or axe. Rightly used the axe may be found to be the most practicable of all, but it must be sharp. Various patent pruners are on the market, some of which are very satisfactory. Some are especially adapted for pruning limbs high in the tree. A chisel attached to a pole may also be used for this purpose.

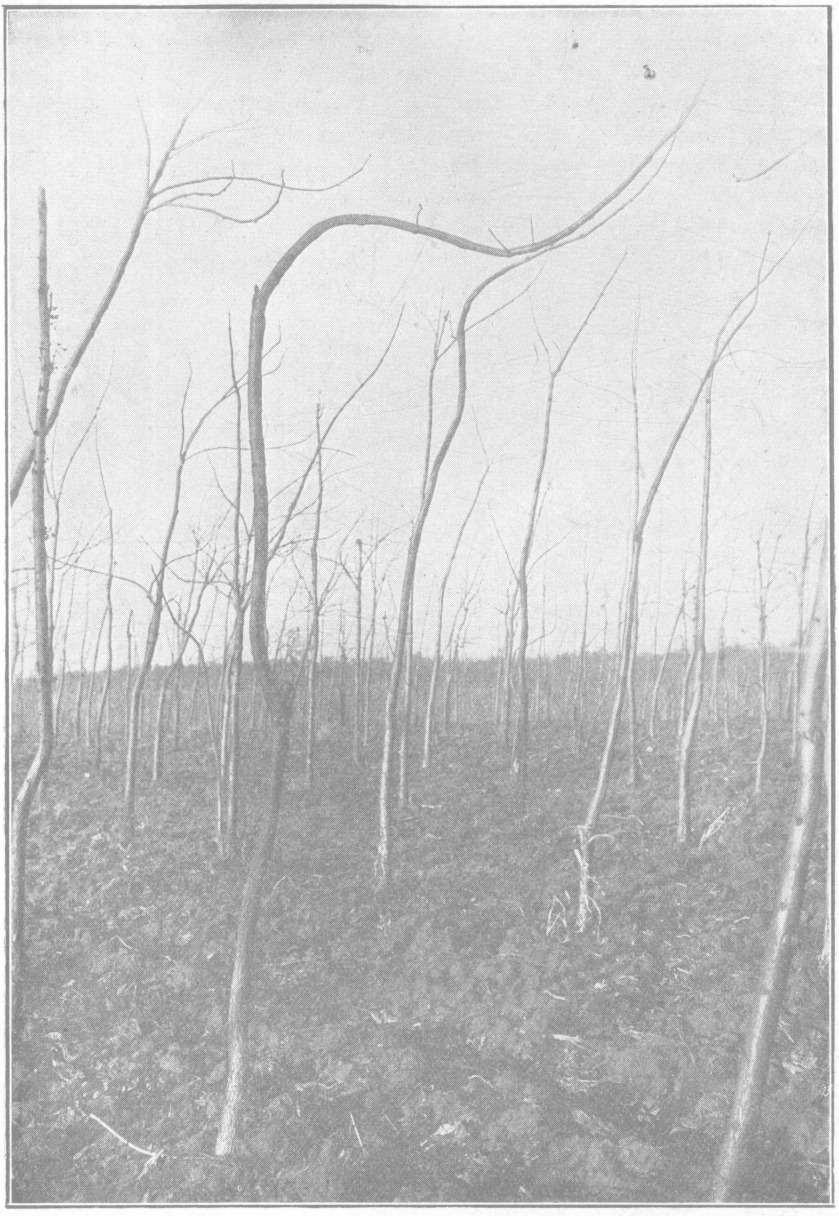
The number of seasons during which trees may be practicably cultivated will vary according to conditions of soil and site.

Approximate period of cultivation for the common forest trees in artificial plantations: Locust, 1 to 2; Catalpa, Mulberry, Poplar, and Soft Maple, 3 to 4. Ash, Larch and Tulip Poplar, 2 to 5; Cypress, Osage Orange and Pines, 4 to 5; Black Walnut, and Hard Maple, 4 to 6.

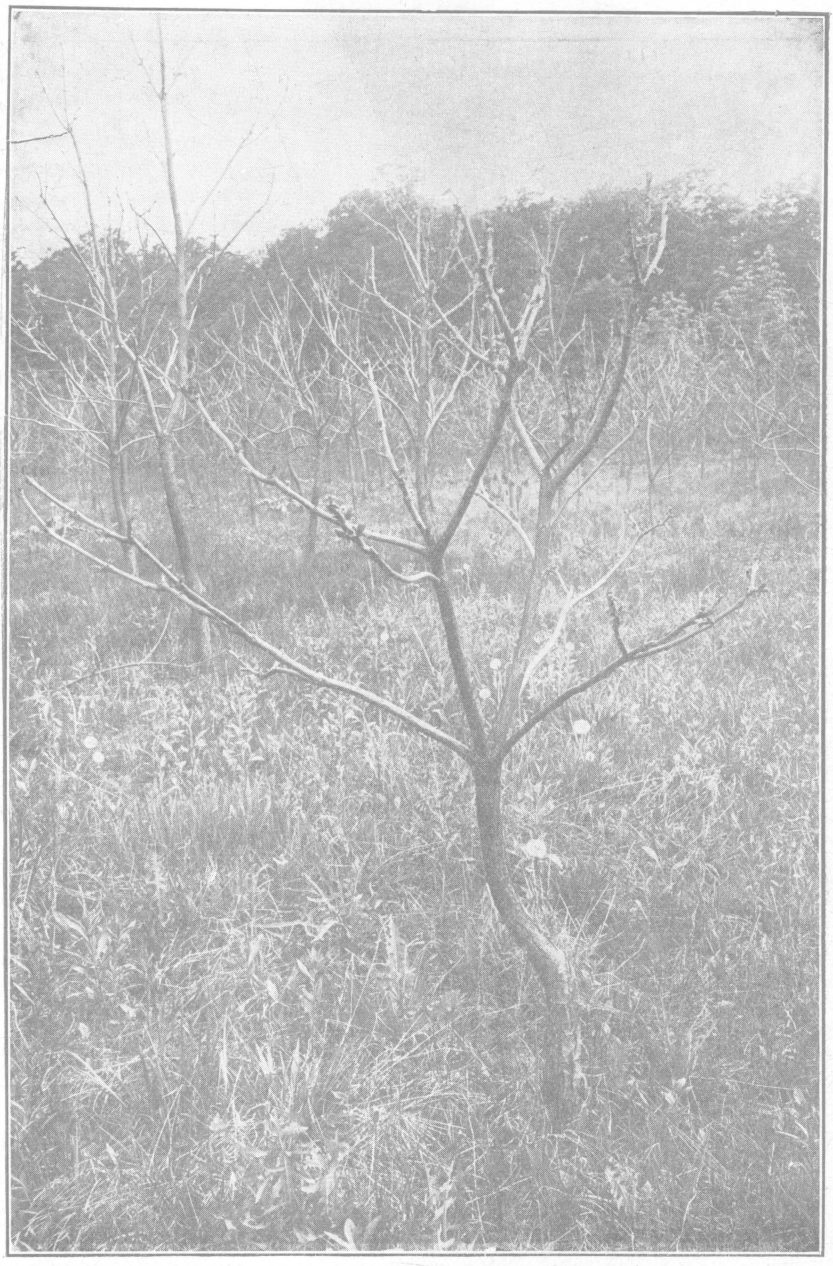
The system of treatment, especially as regards cultivation, applies only to the small farm tree plantations where conditions of agriculture demand intensive methods. In larger operations of reforestation in parts of the state they would often not be applicable



A well pruned catalpa grove. The abundant foliage is an important factor in the rapid development of the trees

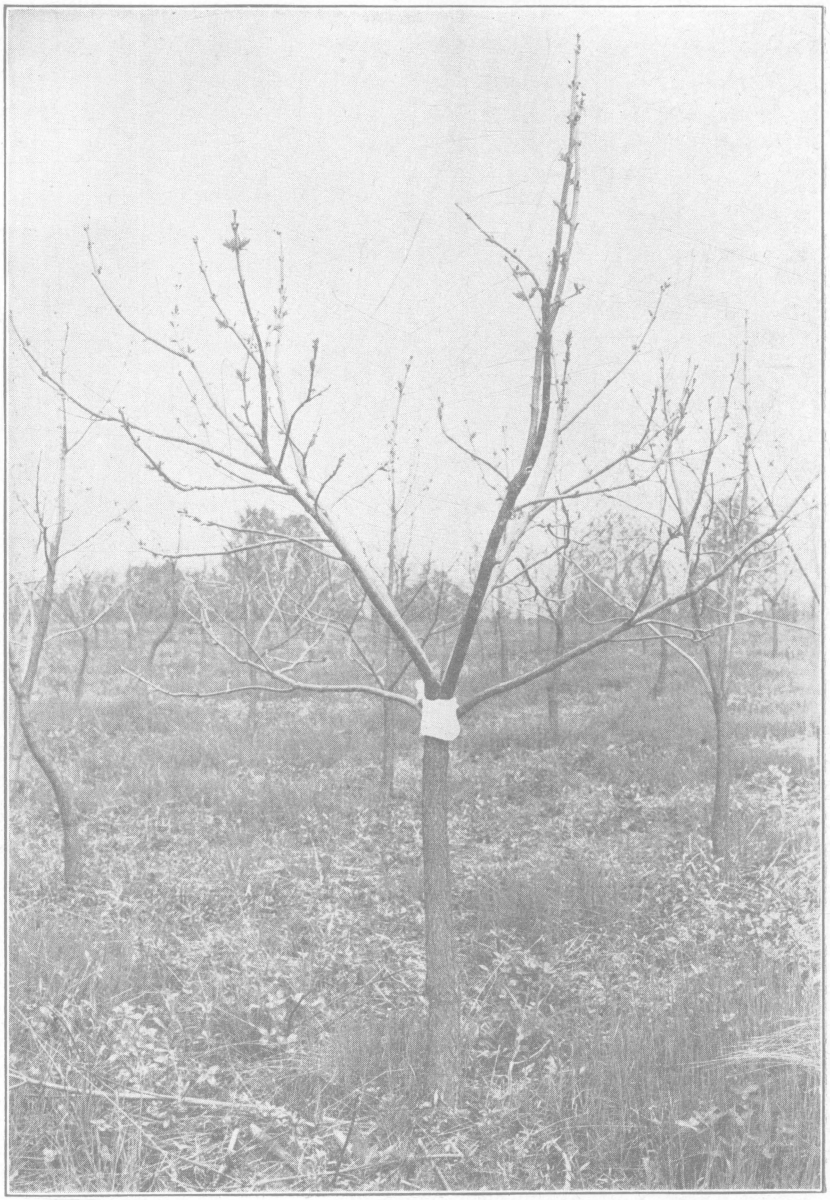


Distortion of catalpa as a result of severe pruning

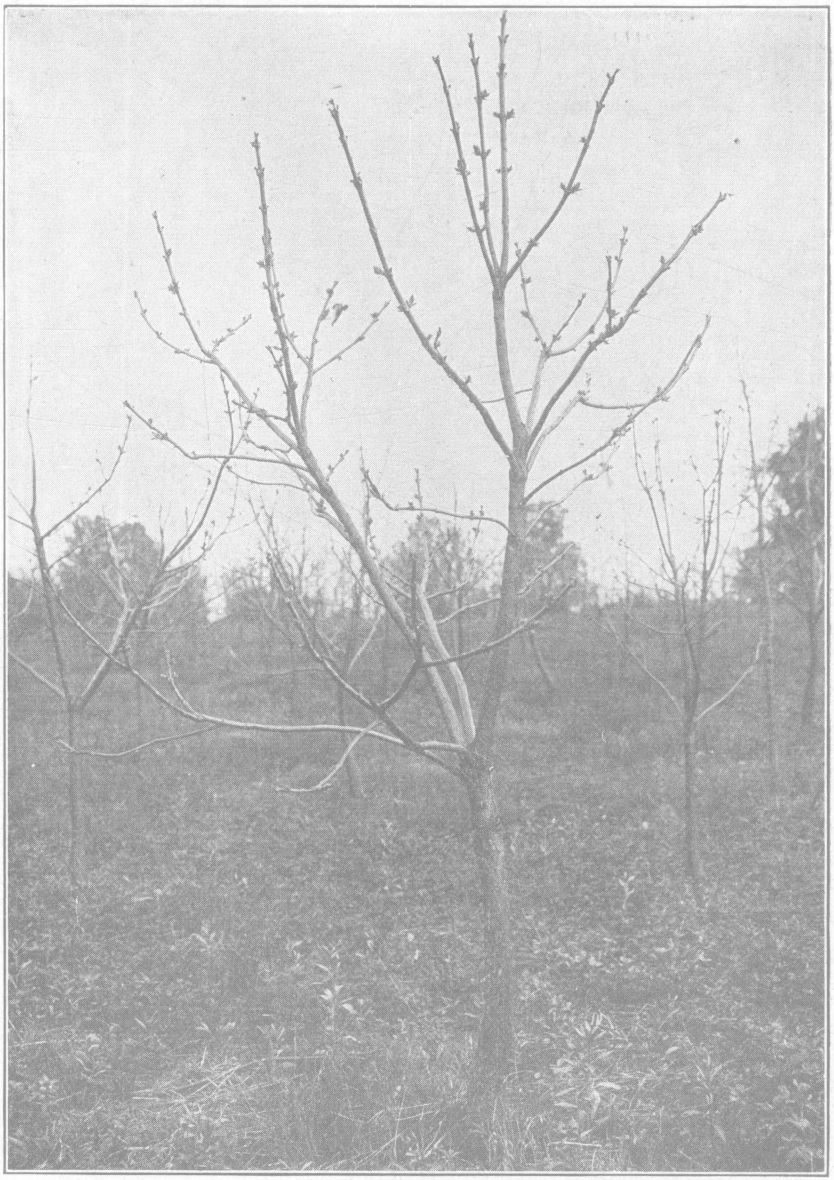


A catalpa which should be cut off at the ground. The sprout if properly cared for will be straight

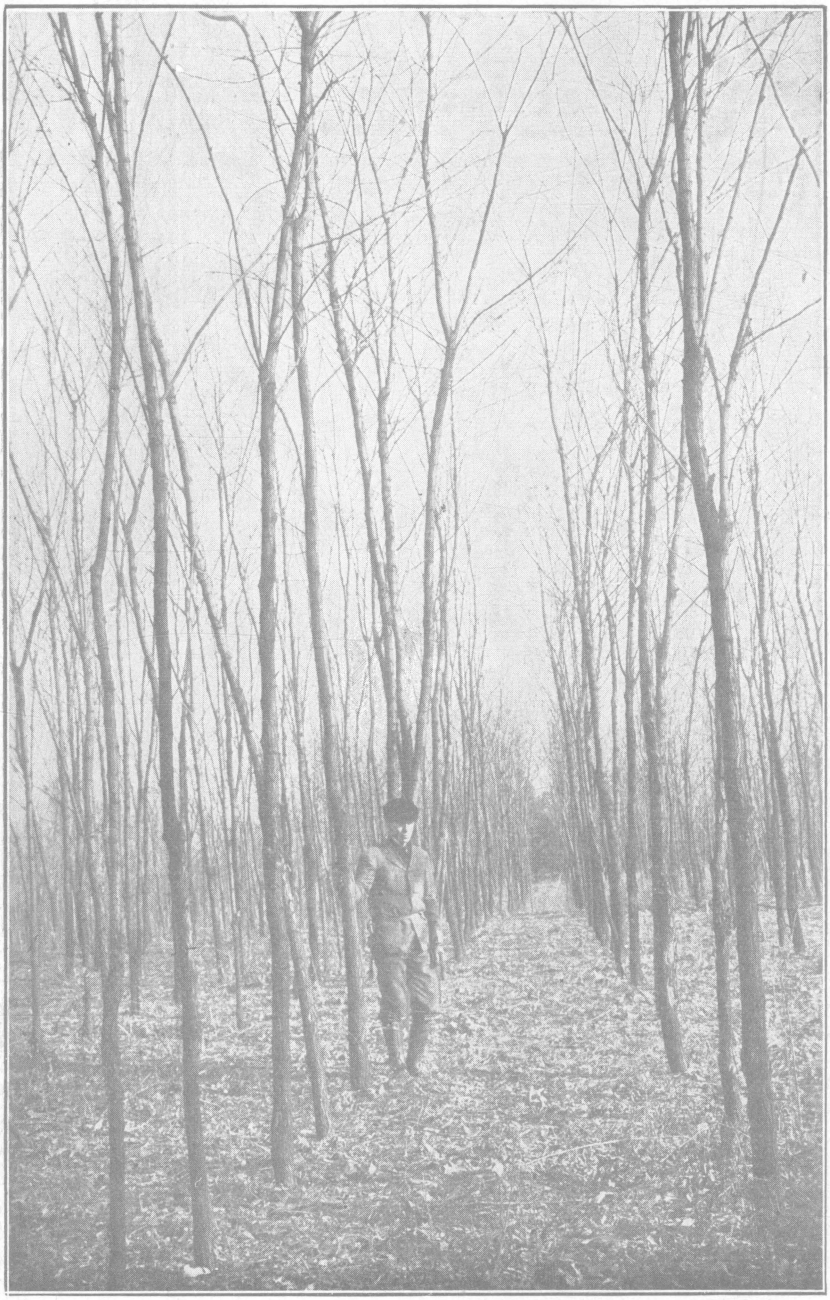
A normal catalpa. One of the branches of the upper fork should be removed leaving the lateral branches to furnish leaf surface



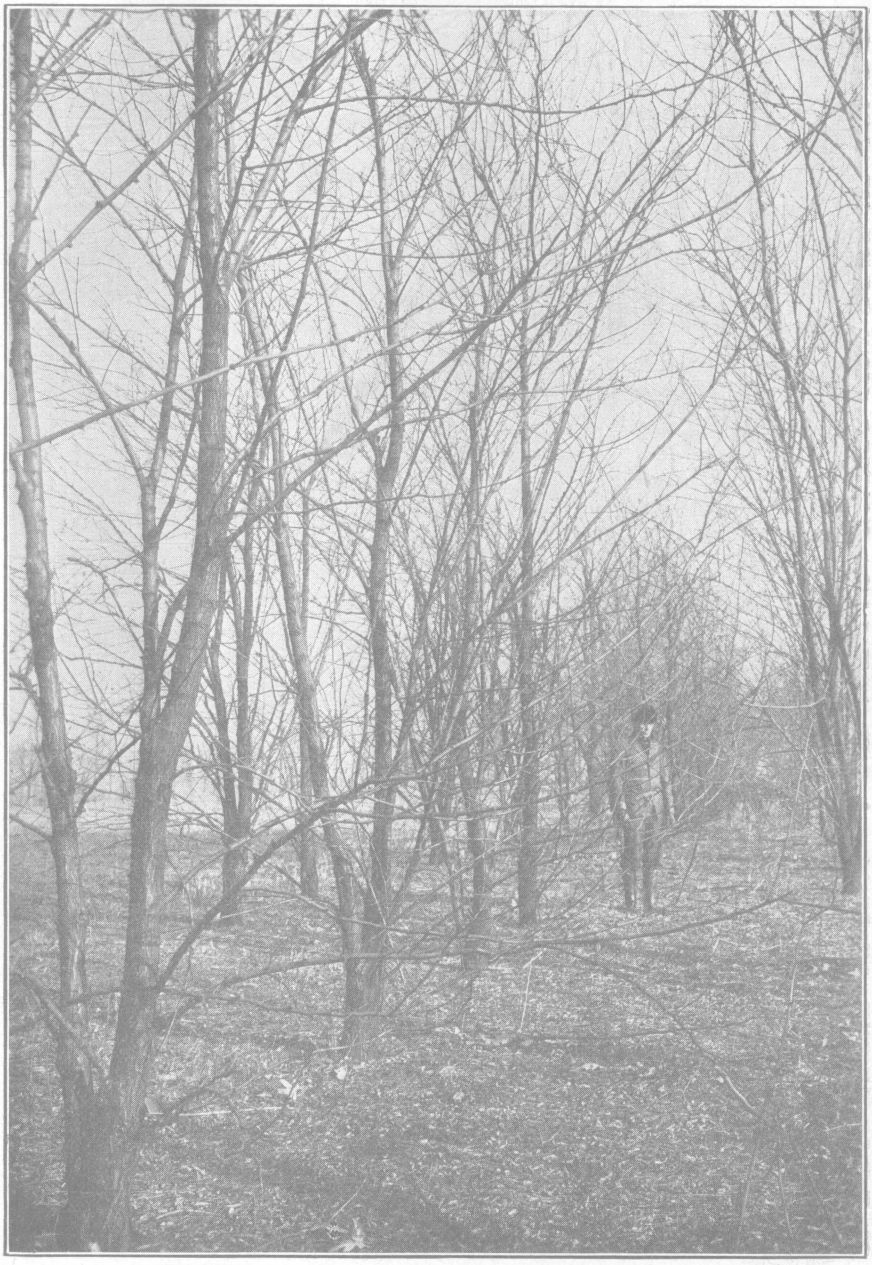
The entire top of the catalpa tree should be severed from the trunk, at the point indicated by the cloth. The thriftiest sprout starting at this point should form the leader, thus saving the four foot trunk



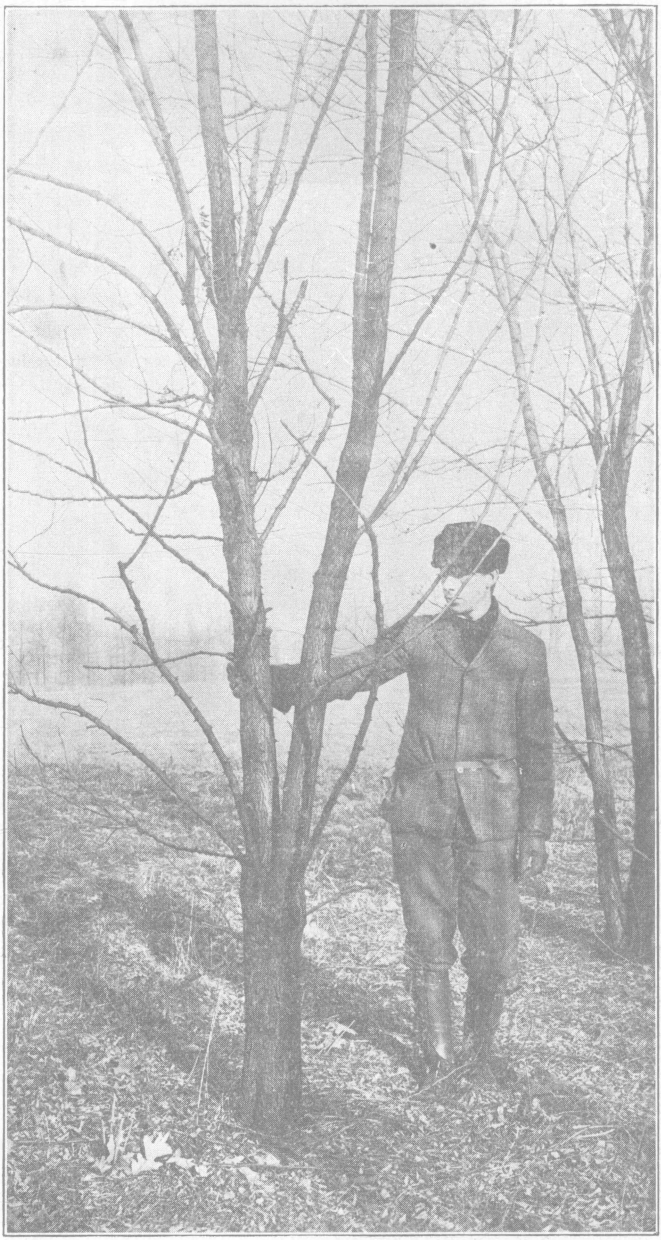
A catalpa, which may be corrected by pruning. Such trees should not be cut off at the ground



A locust plantation, in which all forks have been removed from the trees. The smaller side branches were killed by shading, and have dropped

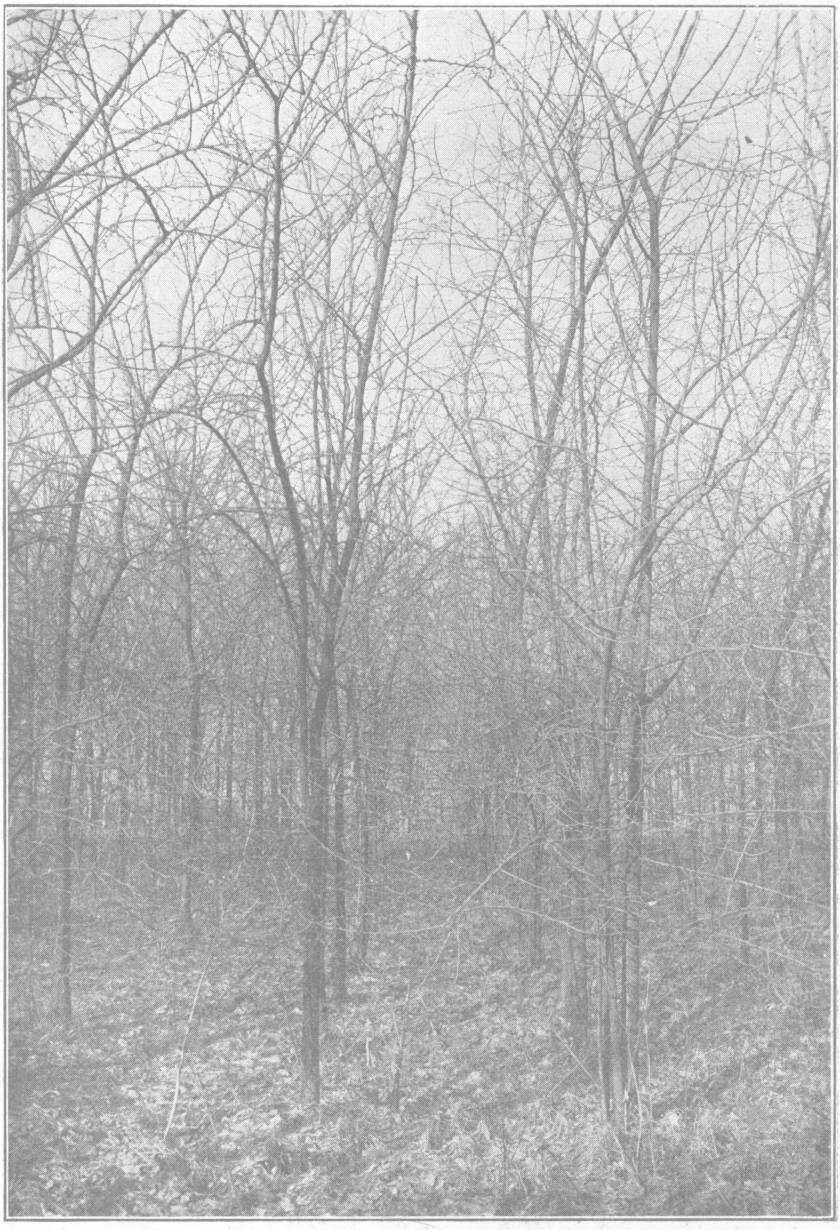


The wide distance of planting black locust, has permitted a spreading habit of growth

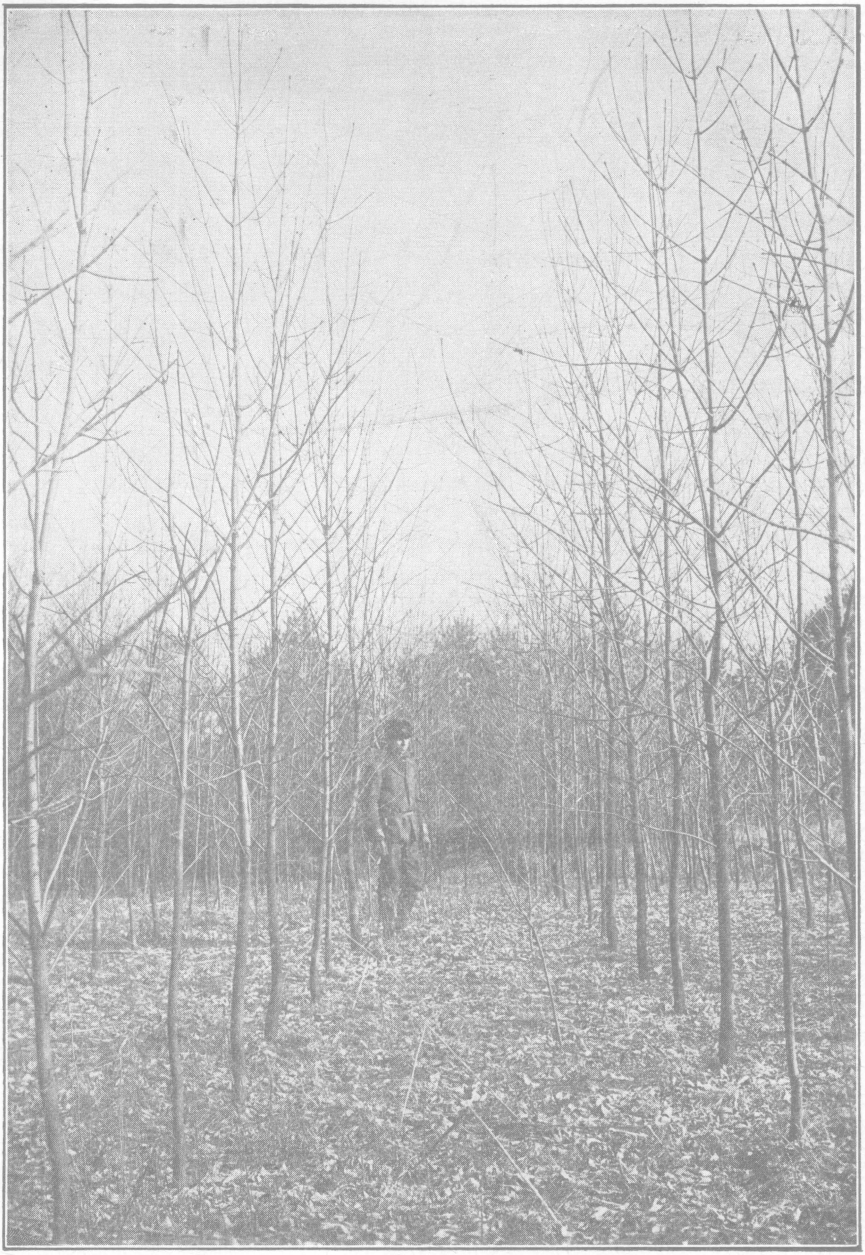


One of the branches of the black locust, forming the fork, should have been removed when the tree was two or three years old. Most of the side branches shown are dead

Russian mulberry in the foreground, showing spreading habit of growth



An osage orange plantation. The close planting has forced the growth upward but has resulted in but little natural pruning



A white ash plantation in excellent condition. The small side branches will die and fall as the trees develop

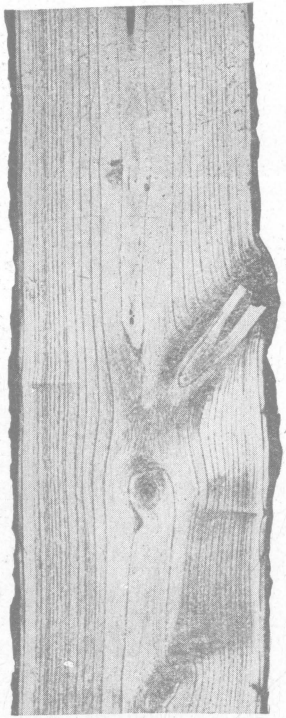


Fig. 1. How a dead branch rots away. Decay has started

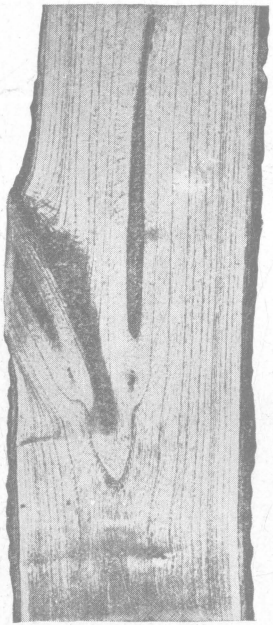


Fig. 2. How to prune a branch

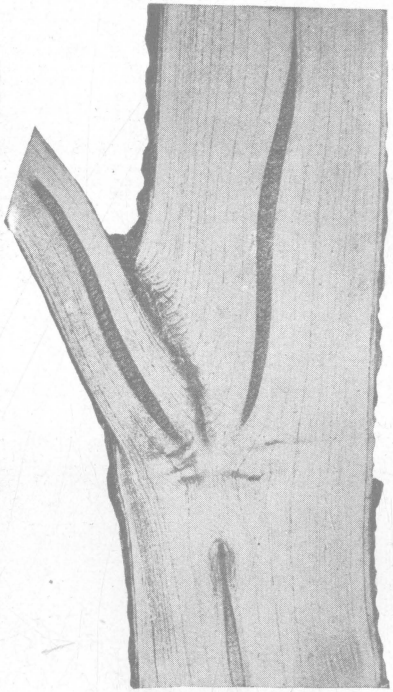
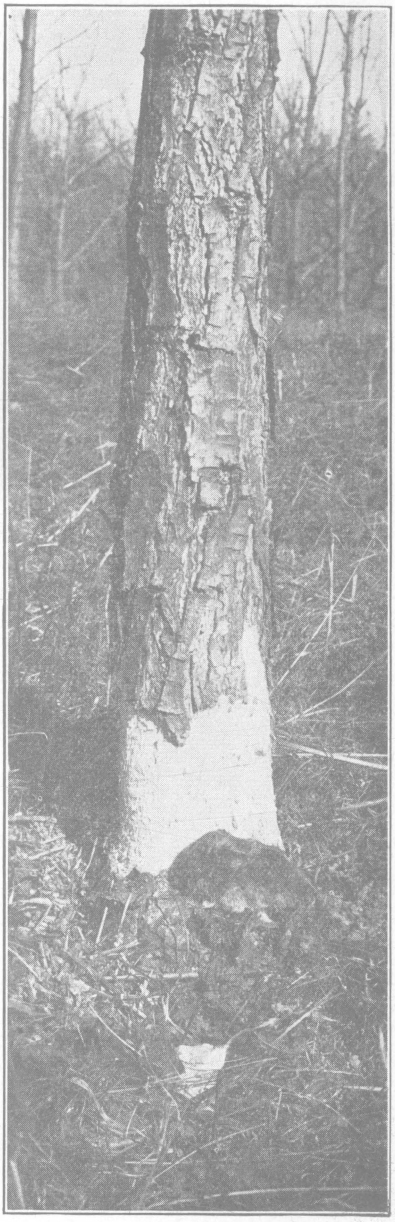
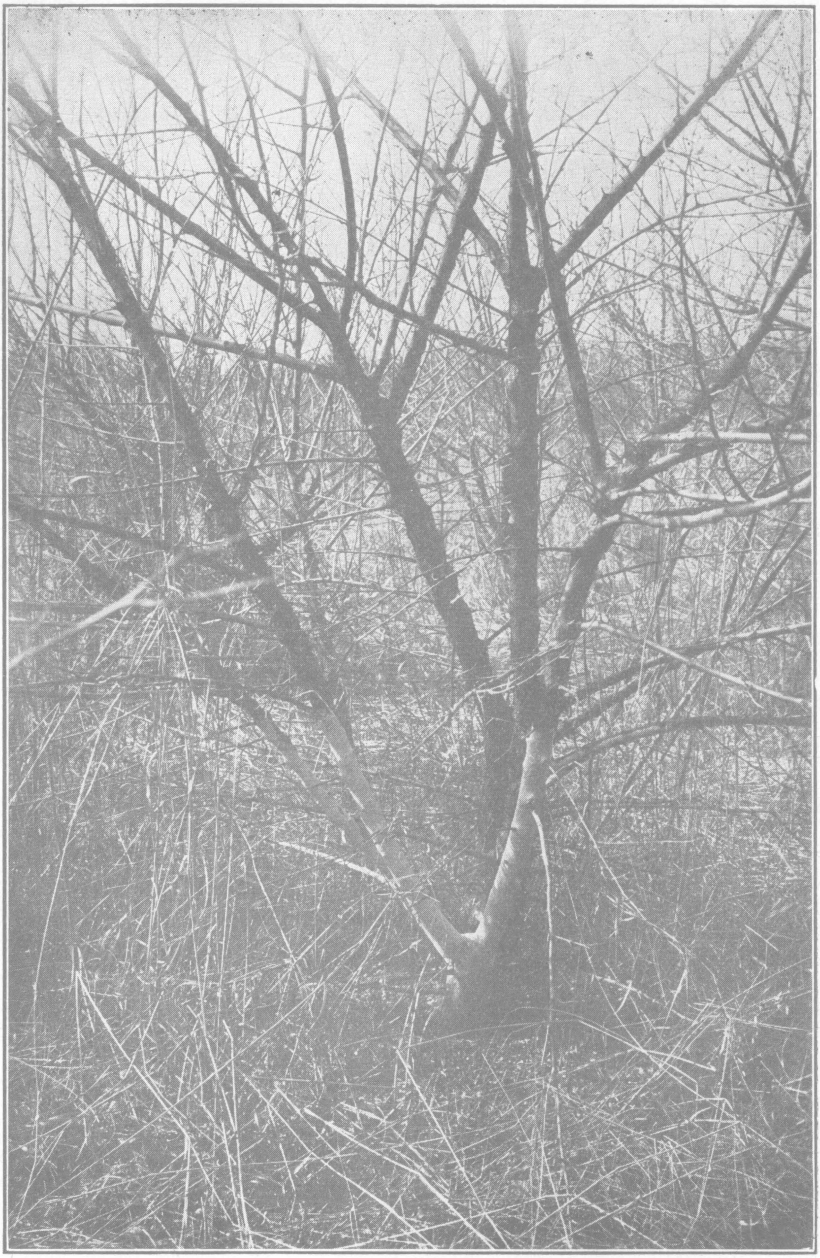


Fig. 3. Poor pruning

Catalpa plantation, (five years growth) injured by mice during heavy snow



A catalpa five inches in diameter girdled by mice



Russian mulberry injured by mice

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